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THE HISTORY of ACCOUNTING MACHINERY

ACCOUNTING MACHINERY of TODAY

ACCOUNTANTS SHOULD COME "FROM BEHIND the CURTAIN"

THE COST to YOUR POCKETBOOK of SOCIAL SECURITY

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THE NEW YORK STATE SOCIETY OF CERTIFIED PUBLIC ACCOUNTANTS



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The New York Certified Public Accountant

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The History of Accounting Machinery

1887

ET us lift aside the veil of time I to look at the modern office of fifty years ago and compare it with the modern office of today. In so doing the amazing progress that has been made in accounting machinery and other office equipment will be apparent.

Business is timidly lifting its head after a severe depression of several years' duration, and the office is a beehive of activity at this time, about the middle of the month of October, 1887. All of the employees are male, for dainty feminism has not yet commenced its conquest of commerce. The chief clerk has just finished posting in his finely shaded Spencerian hand the stoutly leather-bound private ledger with a snap lock, and is about to begin drawing off the quarterly statements. His assistants will be busy until late at night writing up with ink-stained fingers the monthly statements of customers' accounts and addressing envelopes for mailing.

All are perched on tall stools at sloping-topped high wooden desks, along a rack at the back of each of which are ranged Boston filing boxes, resembling bulky ledgers—the last word in filing equipment. The tick-tock of the Seth Thomas eight-day clock is occasionally audible as the pendulum swings relentlessly to and fro. The office boy is busy with the letter press, making copies of bills and letters on the tissue sheets of the sales and correspondence books. A salesman pauses in writing an order to squirt from beneath the fronds of his luxurian mustache a succulent shot of B-L tobacco juice, accurately gauging the range and deflection of the nearest cuspidor.

The business is practically a oneman enterprise inasmuch as all important decisions are made only by "the boss" who is the focus of all of the information and activities of the company. He sits in the partitioned sanctum at a huge roll-top desk, its pigeon holes bursting and its top piled high with papers vital to the management. He is dictating to his male stenographer who will presently emerge to type the letters on the massive typewriter with an ear-

splitting clatter.

On the wall hangs a comparatively new device called the telephone, into which, after turning the crank and speaking a number, it is possible to talk to other subscribers to the telephone service. In a corner stands a towering heavy iron safe to which the books and valuable papers of the business are committed for the night. Although there are arc lights on the poles in the street outside, the building has not yet been wired for electricity, and it is illuminated by gas. There is, however, a central heating system, and one large hot air register in the center of the office floor relieves the chill of the brisk October

A very dignified gentleman, dressed in a Prince Albert coat and wearing a silk hat, appears at the office in the morning, accompanied by several assistants only slightly less dignified. The employees soon learn that the stranger is a public accountant who has been engaged by the boss to check the books to discover why the improvement in business is not reflected in the statements prepared by the bookkeeper. The accountant and his assistants take charge of the records and proceed to foot every column, note each entry, and check each posting, making a complete journal entry, which

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will be included in the report, to correct each error discovered regardless of the amount involved.

At noon there is a pause in the tenhour day while the clerks unwrap and eat their lunches and some of the gay young blades roll cigarettes of Bull Durham. The boss, however, will issue forth to a luncheon club, there to talk over the affairs of the marts of commerce with friends and competitors.

While the modern office of 1887 disclosed no accounting machines, we must not assume that all of the history of accounting machines has been written in the past fifty years.

The history of counting machines is practically as old as counting itself. In fact, without the elemental machine known as the abacus the Roman system of notation would have been impossible for business purposes. It is interesting to note that as recently as two years ago one of our committee found these abaci in regular daily use all over Russia. Even older than the Roman abacus were the "sangi", or number rods, used by the Japanese and the "suanpan", a form of abacus, invented and still used by the Chinese. Some idea of the age of these early counting aids may be found in the knowledge that Pythagoras, the Greek philosopher, used a form of abacus in the Sixth Century B. C.

In 1642, Blaise Pascal, a nineteenyear old French lad, invented and built an adding machine, which has been the foundation for all adding machines. Twenty-nine years later, in 1671, a young German, Gottfried Wilhelm Leibnitz, announced a calculating machine for performing more complicated operations than that of Pascal—multiplying, dividing, and extracting roots, as well as

adding and subtracting.

In 1714, Henry Mill, a Briton, was granted a patent for "An Artificial Machine or Method for the Impressing or Transcribing of Letters, Singly or Progressively one after another as in Writing, whereby all

Writing whatever may be Engrossed in Paper or Parchment so Neat and Exact as not to be distinguished from Print". Except for the imposing title, little or nothing is known about the machine.

In this country, a patent for a "typographer" was obtained by William A. Burt in 1829, about the same time that Charles Babbage, an English mathematician and mechanician, was devoting himself to the construction of machines capable of performing Arithmetical and even Algebraical calculations.

Americans, however, were responsible for the development of the modern typewriter and other office equipment and their adaptation to general use, and we will confine ourselves herein to equipment manufac-

tured in this country.

Accounting machinery which is primarily a combination of the counting machine and the typewriter on which not only counting and computing, but also recording, analyzing and summarizing of transactions are done, is a quite modern invention.

The tabulating (punch card) machine, now extensively used in keeping accounts, was patented by Dr. Herman Hollerith in 1889, after a decade of experimentation, as a strictly counting device, and for many years was known as the "census ma-

chine".

Many other machines, originally intended merely for computing, have by more or less simple modifications been made into bookkeeping machines. The most familiar example of this development is that of the simple adding-listing machine. By equipping the machine with a carriage capable of holding a piece of paper wider than a tape, it became a statement machine. With the more complicated improvement of two registers, so that debits could be accumulated and segregated from credits, the bookkeeping machine was born. When a further modification was made, introducing the cross footing register and permitting the

extraction of balances, the bookkeeping machine came of age. Today there is nothing that can be written with pen and ink, or computed, that cannot be done by machinery and done more accurately and faster than by hand.

With a single exception, namely, the calculating machine of the sliding carriage type, America has led and still leads in the manufacture and general use of accounting ma-

chinery.

The manufacturers of accounting machinery have followed closely the general economic trend of growth and organization. Almost without exception the present makers are the result of numerous mergers and consolidations, with listed securities traded in on the Bourses of the world.

It would be quite futile to list the names and origin dates of even a fraction of the many labor-saving devices now in general use. The committee has long had the hearty cooperation of a number of the largest and oldest makers of office machinery, and herewith presents some historical data gleaned therefrom.

Addressograph-Multigraph Corporation

The idea of an addressing machine developed in the mind of Joseph S. Duncan, who made the first machine, which was merely a series of rubber stamps mounded on an endless chain. Offices were opened in Chicago in 1893 and a few machines were manufactured and sold, the Addressograph Company being organized on January 1, 1896. It is a far cry from the first model to the numerous Addressograph machines now in use.

Burroughs Adding Machine Company

The first Burroughs machine was exhibited publicly in 1884, the invention of William Seward Burroughs, then a young man of twenty-seven. It formed the basis for the funda-

mental patent granted in 1888, the first ever granted for a key-set recording and adding machine. The company introduced its first calculator in 1911 and the electric keydriven calculator in 1928. In 1921, the company acquired the Moon-Hopkins billing and bookkeeping machine which was first marketed in 1909.

Comptometer (Felt & Tarrant)

The first Comptometer Adding and Calculating Machines were manufactured just fifty years ago (in 1887) under patents granted in 1886. It is interesting to note that the inventor of these machines, Dorr Eugene Felt, was also a young man of but twenty-three when he built his first machine in 1885. The locking button was introduced in 1913 and the electrified Comptometer made its appearance in 1934. Control of the company still remains in the families of the founders.

International Business Machines Corporation

International Business Machines Corporation is a consolidation of many companies, manufacturing the Hollerith punched card machines, previously referred to, and an extensive line of office, shop and store labor-saving equipment.

Marchant Calculating Machine Company

The Marchant Calculating Machine Company was organized in 1908 by the Marchant brothers, who had been the American agents for a French calculating machine known as the Dactyl, and who conceived the idea of manufacturing a similar machine in this country. The founders still control this company.

Monroe Calculating Machine Company

The Monroe Calculating Machine Company was organized in

April, 1912 by Jay R. Monroe and Frank Stephen Baldwin, the inventor of the Baldwin Calculator, the basic principles of which formed the basis of the first Monroe Adding-Calculators which were first exhibited at the National Business Show in New York City in the fall of 1912, just twenty-five years ago. Ten years later, the company introduced its first electrically operated machines, and it now manufactures listing and bookkeeping machines founded on the Gardner patents.

National Cash Register Company

The National Cash Register Company was formed by John H. and Frank J. Patterson in 1884, and derives its name from its original and principal product, the Cash Register, which, with the exception of the typewriter, is undoubtedly the most widely used business machine. The Class 2000 bookkeeping machines were developed in 1922 and their first installation was in the Union Dime Savings Bank of New York in the same year. In 1929, the company acquired the Ellis Adding Typewriter, first manufactured about thirty years ago.

Remington-Rand, Inc.

The first part of the name Remington-Rand, Inc. is derived from the original typewriter first marketed in 1874. The attachment of the Wahl adding register to the typewriter in 1908 (acquired by Remington in 1922) converted it into a bookkeeping machine. The Smith-Premier, a double-keyboard, no-shift typewriter, was acquired by Remington in 1912 and is still sold abroad under its own name. The Dalton adding machine was invented in 1902 and acquired in 1927. The Powers tabulating machine was invented in 1911 and acquired in 1927. Other machines and devices were acquired by merger and today the company produces a wide and varied line of office equipment.

Underwood Elliott Fisher Company

The Underwood Typewriter Company introduced its first visible typewriter in 1896 and its accounting machines in 1913. In 1927, it merged with the Elliott-Fisher Company, which had previously acquired the Sundstrand Corporation.

In 1891 Crawford Elliott and Robert J. Fisher each obtained patents on a different machine designed to write on flat surfaces such as provided by bound books, then extensively used. The two companies manufacturing these machines consolidated in 1903.

The Sunstrand ten-key addinglisting machine was introduced in 1914.

It would not be fair to omit some mention of those others who have contributed to accounting by the invention of fountain pens, mechanical pencils, loose leaf devices, carbon paper, slide rules, duplicating devices, filing equipment and innumerable other devices which are so common in the modern office of today.

It is a far cry from 1887 to 1937. The acme of modernity then is now an antique. The machines which are indispensable now had not been introduced then, although their beginnings were just around the corner.

Let us now look into the modern office of today and note the comparison with that of fifty years ago.

1937

Business is timidly lifting its head after a severe depression of several years' duration, and the office is a beehive of activity at this time, about the middle of the month of October 1937. Male clerks have been largely displaced by females, who seem to be better adapted physically and temperamentally to the smooth routine of accounting machine operation.

The loose-leaf general and subsidiary ledgers and the books of original entry are posted by machines, and daily summaries of cash transactions, sales, purchases, etc. enable the controller to perform his functions. Financial statements and reports in analytical detail unknown fifty years ago are ready for the management within a few days after the close of each month. Bills and statements to customers are prepared and mailed promptly, almost automatically, by machines.

The sloping bookkeeping desks, the high stools, and the roll-top desks have been superseded by steel furniture designed for efficient office practice. Filing methods and equipment have become scientific and effective. Electric clocks point the hour with the split-second accuracy of an astronomical observatory chronometer. Carbon paper and duplicating devices have banished the letter press. Tobacco has been

supplanted by chicle.

The business has long since grown from a one-man enterprise into a far flung corporation with many branch offices and plants, beyond the capacity of any one person to supervise effectively. The office is organized by departments and work is routed and authority and responsibility delegated here just as it is in the factory. The executives dictate into machines where their words are recorded on wax cylinders for transcription by ear-phoned secretaries on quietly rapid electric typewriters.

The telephone has left the wall, and there is now one on every desk, where needed, with dials for interoffice extensions or for connection by vast trunk lines with the furthest corners of the world outside. A comparatively new device is the teletypewriter which communicates by direct wire with the distant plants and warehouses for two way transmission and recording. When orders are typed on the machine in this office, they are simultaneously re-

produced on the machine at the other end. Safes are now of insulated steel, proof against the ravages of fire, water and thieves. Electricity is everywhere throughout the office and is the motive power of most of the machines and equipment. Central heating is today supplemented by air-conditioning, including cooling, filtering and circulating the air in the summer months. The certified public accountant and his staff come with such frequent regularity and so little ostentation that their presence is hardly noticed, but the junior still carries the bag.

At noon there is a pause in the seven hour day while the office force is accommodated in a private cafeteria, or descends upon a nearby drug store for the mid-day snack, and everybody smokes cigarettes. The executives, however, will issue forth to a luncheon club, there to talk over the affairs of the marts of commerce with friends and competitors.

Conclusion

Just as the man of the most vivid imagination fifty years ago could neither dream of, nor comprehend such progress as has been made, so we, today, cannot foresee the improvements that will convert our most advanced machines into quaint relics fifty years hence. It is safe to say, however, that if the rate of development continues, the modern office of tomorrow will more than ever resemble a machine shop, and that reliance upon manual operations and susceptibility to human inefficiencies and errors will have been relegated to the then dim past of 1937.

In the meantime, however, it behooves each practicing accountant to secure an intimate knowledge of the workings of the various kinds of office appliances and the benefits to be derived from their use, and to follow the development in the machines as the years roll on.

Accounting Machinery of Today

THE economic development of THE economic development of the business organization during the last fifty years can be attributed primarily to three basic influences: (1) improvements in transportation facilities; (2) improvements in communication facilities; and (3) improvements in production machinery and methods. The increase in the size of the average business unit, together with the necessity for speed, accuracy, legibility and economy in handling the accounting records has made mandatory the adaptation to the accounting office of the improvements in machinery and production methods necessary to enable the office to keep pace with the factory.

The practicing certified public accountant, as the independent accounting advisor to his client, continues to find himself in the position of advising or specifically prescribing as to the office machinery to be used and the related methods of handling and controlling the office operations. His status as "independent" is desirable because of the fact that the salesmen and representatives of the machine manufacturers cannot possibly be considered as disinterested advisors and at times are not sufficiently experienced to insure the fact that they recommend the most efficient machine for the job concerned.

For the guidance of the profession, an attempt has been made herein to set forth certain general fundamental principles governing the selection and installation of accounting machinery. The treatment must of necessity be general, inasmuch as the subject matter is as broad as the field of business and cannot be reduced to any precise formula.

The selection or elimination of accounting machinery must be based on an intelligent understanding of the various classes of machines available, and of their relative advantages and disadvantages, coupled with a comprehensive knowledge of the nature of the transactions to be recorded and of the related organization and personnel. There is a great variety of machinery available, most of which is good. It is a generally admitted fact, however, that for any specific accounting application, some one machine or type of machine will usually have decided advantages over another.

The two basic machines which are considered standard equipment in any office are the typewriter and the adding machine. Bookkeeping machines are, for the most part, adaptations or combinations of one or both of these basic machines, with various special features added. The punched card machines use the basic principles of both, combined with the electrical or mechanical sorting and tabulation of the cards on the basis of the perforations made thereon. The calculators represent a development of the adding machine principle. Continuous form billing machines are a development of the typewriter, as are also remote control telegraphic bill and order machines. Addressing machines represent a distinct group, which is assuming more and more importance in relation to the accounting routines.

Bookkeeping Machines

Bookkeeping machines of the various types available have certain distinctive features which may be summarized as follows:

I. Keyboards

- a. Fully visible (81 keys)
- b. Ten key
- c. Typewriter
- d. Combination fully visible (81 keys) and typewriter

Paper prepared by the Committee on Accounting Machinery of The New York State Society of Certified Public Accountants.

 c. Combination — ten key and/or calculator mechanism with typewriter.

II. Carriage Tabulation

- a. Manual
- b. Key
- c. Automatic

III. Accumulation

- a. Registers—without automatic printing of totals
- b. Registers—with automatic printing of totals

IV. Writing Surface and Feed

- a. Cylindrical
 - 1. Back feed
 - 2. Front feed
- b. Flat

V. Visibility

- a. None
- b. Partial
- c. Total

VI. Automatic repetition of postings or totals

VII. Proof of pick-up

These distinctive features, as summarized above, warrant explanation as to the mechanical factors involved and also as to their relative advantages and disadvantages.

Keyboards:

The fully visible keyboard consists of rows of keys numbered one to nine from bottom to top and arranged in columns side by side up to the desired capacity. Colors are used to punctuate the columns into cents, hundreds, thousands, etc. Each key has a definite value and ciphers are printed without a key stroke. No figures register in the machine until the motor bar is depressed, therefore corrections may be made in any digit at any time before the motor bar is depressed by depressing another key in that digit, thus restoring the key previously depressed, or by clearing the keyboard completely by depressing the

"error" key. Speed of operation is acquired on this keyboard by visualizing the figures in such a manner that the hand works from the bottom to the top of the keyboard regardless of digit, using four fingers for the keys. While the motor is turning over, the next figures can be depressed.

The ten key keyboard consists of keys numbered one to nine plus a zero key, arranged in a small space in such manner that they can be operated by a rythmic touch method with the fingers of one hand. The figures are recorded by depressing the keys in sequence, reading the figures from left to right. The zero key must be actuated to record ciphers. Corrections can be made before depressing the motor bar by depressing the "error" key and resetting the complete figure.

The typewriter keyboard consists of keys numbered one to nine plus a zero key, arranged at the top or bottom of a standard typewriter keyboard. The figures are recorded by depressing the keys in sequence, reading the figures from left to right. The zero key must be actuated to record ciphers, and the space key for spaces in figures. Each figure prints as the key is depressed and corrections can be made only by subtracting out the erroneous and putting in the correct figures, either erasing the wrong figures and "non-printing" their reversal or spreading the entire operation on the record. In some cases the registers are actuated digit by digit as the keys are depressed. In other cases the register mechanism is actuated electrically as the last figure is written. In these last cases, corrections can be made prior to depressing the last figure by using the error key to clear the transaction and replacing the correct figures. Recently, certain of these typewriter keyboard machines have been equipped with the electric keyboard. which feature speeds up the operation and lessens the fatigue of the operator.

The combination of the fully visible (81 keys) keyboard with a type-writer keyboard is desirable when the operation requires a typewriter keyboard for descriptive matter, and when the features of the fully visible adding machine keyboard seem to offer advantages in recording the figures involved.

The same principle holds true in the case of the combination of the ten key keyboard with the type-writer. The additional inclusion of the calculator mechanism makes it possible to make extensions on invoices and to calculate cash and trade discounts in the course of the machine operation. This feature may be advantageous in certain cases, as an alternative to having the calculations performed on the posting media in a separate operation before the actual posting operation.

Each of the above keyboards may have certain advantages on certain classes of work with certain classes of personnel. The one self-evident fact is that, when the descriptive data required cannot be coded into a small number of symbols, it will be necessary to have a typewriter keyboard or combination. If descriptions can be coded briefly and a majority of the figures are in even amounts, the 81 key keyboard may be desirable from the standpoint of eliminating the actuation of zero keys.

Carriage Tabulation:

Carriage tabulation consists of the movement of the carriage, chute or other device in such manner as to allocate the figures being posted to a certain column and totalizer. In the case of the typewriter keyboard machines, this tabulation is usually key operated, with decimal selection. For example, having finished the date, a blank tabulator key is depressed to jump the carriage to the point where the description starts; next, to place an amount of \$1,285.16 in the debit column, the operator de-

presses the 1,000 digit tabulator key to bring the carriage to the proper point to start the figure, repeating for the other columns to the right. The mechanism is usually set to return automatically to the starting point as soon as the end of the line is reached. The adding machine and machines combination keyboard have automatic tabulation for the most part, the carriage moving from one column to the next after the recording of the figures. The figures automatically fall in alignment on the right without decimal selection.

Some of the simpler types of adding machine keyboard machines have a type of carriage which normally remains in one position, but which can be moved from one column to another by hand.

One type of fully visible keyboard machine has an automatic column selection feature without carriage movement.

Accumulation:

Machines of the typewriter keyboard type are usually equipped with registers, so arranged as to accumulate separately the amounts typed in the respective columns. An additional crossfooting register provides for the accumulation of net balances on individual accounts as follows:

Old balance (debit) + posting (debit) - posting (credit) = new balance (debit).

On these machines there is no automatic clearance of totals, either from the crossfooting register or from the vertical totalizers. The figures must be copied from the registers.

The adding machine keyboard machines provide for automatic clearance of any totalizer by the depression of a clearance key. If the balances on the accounts are large and the number of postings per day per account are few in number, this automatic printing of totals may be particularly desirable.

Writing Surface and Feed:

Back feed refers to the conventional typewriter feeding on a cylindrical platen of the ledger sheets or other material on which the postings are to be made. Front feed refers to a feature used on the same type of cylindrical platen, which permits the insertion of material at the front of the platen. This feature is very helpful on certain types of collation of forms, particularly when a large proof sheet is kept in the machine and one or two additional forms are being collated therewith. The flat bed feed provides a flat surface upon which the forms may be set, the posting being made by a movable typewriter head above the flat bed. This feature is desirable on certain classes of work, particularly on difficult collation of more than two forms. The flat bed also makes feasible certain features of transverse and lateral continuous carbon paper, which may be very helpful and economical.

Visibility:

Some machines provide for complete visibility as to the recording operation of the machine. Some provide a partial visibility and some provide none. Complete visibility is usually desirable, but its lack may be offset by other advantages. It is not as essential on the fully visible keyboard machine as on the other types.

Automatic Repetition of Postings or Totals:

Automatic repetition of postings or totals is possible on certain classes of machines and may be very desirable on certain machine applications. Such a feature makes possible the posting of a ledger and statement, each an original copy, in one operation, the machine automatically repeating on the second posting the complete operation of the first. In other cases it may be desirable to repeat only the total cleared from the crossfooting totalizer.

Proof of Pick-Up:

There are various mechanics for proving the accuracy of old balances picked up and the resultant accuracy of new balances. The most positive proof is, of course, a trial balance of the accounts operated under the control concerned. If the trial balance does not agree with the control and the daily postings have been proved against independent totals, a recheck of the pick-ups should reveal the error. In the case of a control involving a small number of accounts which are regularly active, the trial balance is probably the easiest method. However, in the case of a control involving a large number of accounts which are irregularly active, some form of daily proof on the accuracy of pick-ups is desirable. The so-called "line proof" has been evolved with variations to meet this requirement. One method of line proof is as follows:

The old balance is picked up a second time from the original source, subtracted from the new balance, and the resultant "posting (debit)" accumulated and proved against a predetermined total. Unless the old balances picked up are the same in both cases and the posting is correct, the last column will not prove in total with the predetermined total of postings. In other cases, the old balances are picked up twice as above and the totals of columns 1, 2 and 4 accumulated, column 5 being dropped. The totals of columns 1 and 4 are proved against each other and the total of column 2 proved against a predetermined total of postings. These proofs as to pick-ups are based upon the assumption that an operator will not make the same mistake twice, if she has to go back to the same original figure both times. It is not 100% positive control.

The particular requirements of an individual machine application will

usually indicate certain of the above enumerated features which will be

advantageous.

The basic factors which should be considered in weighing the relative advantages of any bookkeeping machine are:

a. Training necessary to operate the machine.

b. Number of postings per day on the job concerned.

 Flexibility from the standpoint of application to other possible jobs.

d. Proof of accuracy.

e. Audit and control features.

In many cases, particularly in the small office, it is very desirable that one bookkeeping machine be used for more than one class of work. In order to make this possible, it will be necessary to use a type of machine having the various features required by all phases of the work and also the flexibility necessary to change over quickly from one operation to another.

Certain businesses require special audit and control features. A good example of such a requirement is the so-called "cashier posting routine", under which the cashiers post the ledgers, as cash is taken in or disbursed, with certification of the transaction to the customer and a complete record of all machine transactions on an audit tape locked in the machine and available only to

the audit staff.

Punched Card Machines

Punched card machines are very efficient where the volume of transactions is heavy and the information contained on the cards must be reclassified and recorded more than twice. Almost any accounting operation in which the descriptive data can be coded may be handled efficiently on these machines. The basic rental cost of the equipment, however, makes it uneconomical for the handling of a small volume of transactions. The cost of the rental, the cards, and the punching and verify-

ing of the cards may render such equipment uneconomical even with a heavy volume, when the cards are classified and tabulated only once or twice. Sorting and tabulating equipment will ordinarily function at the rate of about 400 and 100 to 150 cards per minute respectively. The time required to handle the material concerned should be determined in advance to make certain that the necessary operations can be handled within the time available.

The punched card method has one outstanding advantage over all others, in that once the cards are punched correctly, the sorting and tabulating is automatic and therefore not subject to errors in distribution, transpositions, etc., other than errors in machine accuracy, which are infrequent and are usually signaled by the machine, if, as and when

made.

Calculating Machines

Each of the various calculating machines available has certain distinctive features which may affect their relative efficiency on a certain class of work. An analysis of these features, as related to a given application, is relatively simple and is not covered herein.

Addressing Machines

Addressing machines are becoming more and more useful and more closely related to the accounting requirements of the office in many organizations, particularly under the requirements of the Social Security Acts. The number of machines available is limited and the problem of judging relative efficiency and economy is comparatively simple.

Selection of Machine Equipment

The problem of determining the desirability of one type of book-keeping or punched card machine as compared with another, or as compared with pen and ink methods, is a real problem and should be solved by following a logical and intelligent procedure.

First, the accountant must make up his mind that no one type or make of machine is uniformly the best for all work; second, he must have or acquire a thorough understanding of the numerous machines and the special features of each; third, he must make a comprehensive study and analysis of the existing organization and routines of the particular business involved; and fourth, he must proceed on the basic theory that no machine, no matter how well designed and constructed, can be efficient unless it is fitted into a coordinated organization with a smooth flow of material in standardized prescribed form to and from each operation.

The economies of machine equipment in general are based upon the possibilities of handling two or more normal operations in one machine operation, the factor of daily control and proof of accuracy with the resulting elimination of rechecking a volume of work at the end of the month to prove accuracy, the elimination of peak load periods through the steady cycle of work made possible under machine methods and the improvement in functional organization induced by proper organization for machine methods.

A review of the existing situation should reveal the following:

- 1. The volume of each class of transaction and the cost of handling.
- The adequacy of the results obtained as to information supplied, and the accuracy and promptness with which available.
- 3. The adequacy of the methods of internal control in effect.
- The possibilities of eliminating duplication of reports and operations.
- 5. The possibilities of effecting combinations of operations under machine routines.

These five points appear relatively simple, but an analysis of their scope

will reveal the fact that they will require a careful review of the entire operations of all departments of the business, a tabulation of all personnel, the compensation, duties and accomplishment of each, a review of all accounting routines and a careful analysis of the adequacy of existing reports to the management.

The effect of the installation of adequate machine methods to replace pen and ink routines is illustrated by one reported case in which the work previously handled by twelve clerks and one supervisor, with considerable overtime work, was handled by five bookkeeping machines, with an operator for each, one control clerk and one supervisor, without overtime work. Seven people, taken from the existing group, with adequate machine equipment turned out a much more prompt, complete, accurate and neat result without the necessity for overtime, with a considerable capacity for expansion and with a resultant saving in cost calculated as follows:

Hand methods:

Twelve clerks—total salary cost per annum	
One supervisor—total salary cost per annum	2,400.00
	\$18,000.00

Machine methods:

\$ 6,500.00
1,500.00
2,400.00
\$10,400.00
1,400.00
\$11,800.00
\$ 6,200.00

The effect of employing the most suitable machines is illustrated by a reported case of an injudicious installation where four bookkeeping machines were used, representing an investment of \$5,000.00. As a result of a proper machine application, with some rearrangement of material and a combination of operations, one machine of a slightly different type was used to turn out the same result. The new machine cost \$1,600.00. Both types of machines were good but one was improperly applied.

Conclusion

In the beginning, bookkeeping machines were used solely for accounts receivable ledgers. They have now developed to a point where they are used for every phase of accounting activity, for accounts receivable ledger and statement, savings institution ledger and pass book, hotel guest accounts with daily departmental check, accounts payable with remittance statements and analysis of charges, check writing with disbursement register as a by-prod-

uct, inventory control, commission accounts, sales analysis, etc.

Any machine installation or accounting change must justify itself either by improving the results obtained or by cutting the cost of the accounting office. In changing from pen and ink methods in an office emploving more than four people on the actual accounting work, it will usually be possible to do both, while a careful analysis of any existing machine operations will very frequently reveal possibilities for improvements and economy. The experience of the certified public accountant in the various organizations of his clients will indicate the fact that a majority of the business organizations of today are still very much behind the times in respect to the adoption of efficient and economical machine methods and accounting routines.

Accountants Should Come "From Behind the Curtain"

By Frank A. Gale

PROFESSIONAL accounting has a story to tell and the medium by which such a story is told is called public relations. The question "what is public relations?" is often asked. The answer usually is that it is the process of making people like you. But the problem, perhaps, is not so much a matter of making people like you as it is one of making them understand you, appreciate the kind of a job you are doing and realize how it relates to their interest.

The public accountant in his daily professional activities renders great service to the public and to business, and the accountant is entitled to full recognition by the public and by

business of this service.

Recently, I talked to the editor of the business news department of one of our daily papers in New York and we discussed the work and the importance of the public accountant. He ventured the statement that accounting in general "left him cold". He changed his mind, however, when he heard of the many important things which public accountants do, how vital a part of the business picture they are, and how accounting is so much a factor in business management and progress.

He heard with great interest references to the early days of accounting in this country, when public accountants rendered so much valuable service in the actual establishment of the great industries of today. These men, this editor learned for the first time, rendered valiant service in organizing the first accounts of great railroads and other industrial and business undertakings. It was even possible to picture for him some of the hardships of frontier life, some

of the struggles against individualistic management, which these pioneer accountants experienced.

This newspaper man said:

"If one-half of what you say about accounting and its history is true, it seems to me that the accountants should come out and tell people about themselves. They should come from behind the curtain and compel widespread public recognition of the service they are rendering."

The accountant has, indeed, a story to tell in the direction of letting the public know of the work he is doing, and of the great possibilities in his professional background for further service to business management and

to the public.

Unfortunately, the term public relations frequently suggests a picture of ballyhoo and of many circus-like activities which group themselves under the heading of publicity. Ballyhoo has no place in the public relations or publicity problem of the public accountant. The story which must be told is a dignified one.

The profession of accounting, in its consideration of the broad question of public relations, has had in the past an attitude similar to that held by the medical and legal and engineering professions until recently. These three groups long felt that their activities were not of particular interest to the public, but they have been compelled to alter this viewpoint. Advances in the medical arts, including research and increased activities of doctors in the field of public health; the increasing need for public understanding of great engineering undertakings and the increasing activities of lawyers

Presented at the Fourth Annual Regional Chapter Conference of The New York State Society of Certified Public Accountants held at Skaneateles, New York, on June 25-26, 1937.

with relation to new concepts in legislation have made it necessary for these groups to consider public

relations.

The American Medical Association today keeps the public informed of advances in medicine. Engineering groups are making available information bearing on the relation of engineering to the public welfare and dramatizing the importance of outstanding public works activities. And the American Bar Association has now under consideration a public relations plan, by which the public will be informed of the relationship of the lawyer to the public interest and his activities in connection with important public questions.

The point of all this is that three great professions which formerly believed that they were generally doing work in which the public would not be interested have now changed their position. By every legitimate means, they are letting the people of the country know of the things they are doing and the public, it safely may be said, is responding by taking a new interest in the activities of these

professional men.

The accountant has his definite place in the field of public affairs. In many cases, he is the man best qualified to discuss certain public questions. Here is a case in point: Candidates for election to the Board of Town Commissioners of a community near New York invited local citizens to discuss, in a series of public meetings, certain questions which were important to the voters of the community. One of these questions was that of the tax rate.

Lawyers, engineers and business men were called upon as speakers at these meetings. In no single case, was a public accountant asked to speak, despite the fact that, in the case of the tax discussion, he could have contributed more constructive information than anyone of the men called upon.

One of the points involved here is that, in considering the men best

qualified to discuss the town problems, those in charge of the meetings did not think of public accountants. A further point is that public accountants had done nothing in the way of public relations to make themselves felt as an influential social unit in the town.

Here are both ends of the problem: On the one hand, to make the public aware of the existence and the importance of the accountants; on the other hand, to make responsible civic leaders feel that all sides of public questions have not been presented adequately if the accountants are not heard from.

Following this thought, we find that the accounting profession must consider its public relations problem from two angles. One of these is in presenting nationally the story of accounting and its services to business, to government and to the people. The other is that the public relations program must extend to every organized state and local accounting group, to the end that the story of professional accounting is told in an organized way in every community where there are public accountants; in every state; in every natural geographical region, and nationally.

Of course, what we are talking about is not really new. As a matter of fact, many of the state societies and the American Institute of Accountants have done much already in the field of public relations. The problem is not so much one of starting something new as it is one of capitalizing on what has been done already and carrying the work forward from that point. Many notable public relations activities have been carried on within the field of professional accounting. The groundwork for an organized program is well laid.

Every meeting of a professional accounting group, whether it be a local or state organization, is news. It is better news if the programs for

meetings are so arranged as to dramatize as often as is possible subjects which are not only of interest to the accountants, but to the business and general community as well. Regional conferences, arranged under the sponsorship of state accounting societies, offer exceptional opportunities for dramatization of the accountants' contribution to the public welfare, and to promote constructive discussion of public affairs under accounting auspices.

There are many topics of wide general interest which can be discussed publicly at the meetings of local or state groups, or at regional conferences. These subjects include, for

example, government accounting, municipal accounting, taxation, and other questions bearing on the public interest.

These are the broad factors in public relations. It is a simple matter to reduce these to terms of actual performance, of actual technique involved in contacts with the press, with other local professional and business groups and with the public as a whole. The facts in the case lead inescapably to the conclusion that the public accountant, as a professional man, is justified in following the medical and legal and engineering professions in a decision to tell his story to the public.

The Cost to Your Pocketbook of Social Security

By JACOB STEWART SEIDMAN, C. P. A.

HE two big fears that millions of I us have in life, are dependent old age and unemployment. It was to help us eliminate these fears that the federal social security law was born. In the face of this humanitarian purpose, it may sound almost like treason to suggest that we all get very hard-boiled and materialistic, and look at social security solely from the standpoint of our pocketbook. However, as it is our pocketbook that in the last analysis is our real concern, it is in keeping with the spirit of social security to ask just where we do come off. Let us, therefore, put aside the arguments of politics and philosophy for or against social security. We will proceed, instead, solely in terms of "do-re-mi". with emphasis on the "me". I think we will find in such a cold blooded analysis some interesting things that some of us may not have considered in our previous size-up of social security.

Let us ask ourselves first, what in dollars and cents do we get out of social security? To answer this question, it will be advisable to do a little preliminary explaining about the social security law. The part of the law with which we are here concerned, in effect makes out of Uncle Sam a tremendous insurance company to provide workers with policies covering old age and unemployment. Not everybody can get these policies. As a matter of fact, only 50% of the workers and only 25% of the total population are directly covered. Certain groups are excluded entirely, namely, housewives, domestic help, farm workers, government employees, seamen, employees of certain charitable and non-profit institutions, professional people and others self-employed, and

finally those who are now unemployed and continue to be unemployed. The pocketbook of these groups, therefore, will have nothing coming in. Of course, it also means that they do not have to pay any premiums, but as we shall later see, they are not altogether scotfree of expense

Now let us suppose we are in the 50% group that is covered. What money benefits do we get under our policies? Well, so far as the old age part is concerned, the least we get is 3½% of the amount of money we make from this year on until we reach 65. We can get more than this 3½%, depending on how long we live beyond the age of 65, because on reaching that age, monthly payments are made to us for the rest of our lives, ranging from \$10.00 to \$85.00 a month.

These monthly payments are based on our previous earnings. For example, on average earnings of \$20.00 a week, those who are now 60 years of age will, in 1942, when they reach 65, start to receive checks from the government of \$17.00 a month in round figures, or about \$4.25 a week. Those now 40 years old will get, starting with 1962 when they become 65, checks for \$35.00 a month or \$8.75 a week. Those now 18 years of age and who make an average of \$20.00 a week, will when they become 65, get \$52.00 a month or \$13.00 a week. The \$85.00 a month maximum will be paid to those who are now 22 and who, for the next 43 years, have average earnings of at least \$3,000 a year, or to all those now 18 and whose average earnings until they reach 65 will be \$2,700 a year.

These monthly payments may in total amount to more than the $3\frac{1}{2}\%$ minimum we are entitled to. If they

Note: A radio talk broadcasted over the Columbia network, on August 18, 1937, under the auspices of the New York Chapter of the National Association of Cost Accountants.

do, so much the better for us. If by the time of our death, these monthly payments have not yet equaled the 3½% of our previous earnings, the difference is paid in

lump sum to our estate.

There are certain limitations and exceptions regarding these benefits. For example, the monthly payments do not start before 1942. Also, our earnings in excess of \$3,000 a year from any one employer are not counted in figuring benefits or premiums. These and other frills and fancies we will leave to the experts to grapple with. For our purposes we can sum up the situation by saying that the old age part of our policy puts our pocketbooks on the receiving side to the tune of \$10.00 to \$85.00 a month from the time we reach 65, but in no event do we get less than 31/2% of our earnings from 1937 on.

Now for the unemployment part. When and by how much do our pockets jingle in the event of unemployment? That depends on the state laws because the federal government does not make any direct payments for unemployment. The federal government makes its payments to the states and the states pay the unemployed. Generally speaking, here is the way the state laws work: When unemployment sets in, there is a waiting period prescribed of two or three weeks, and, if unemployment persists after the waiting period, we then receive onehalf of our regular weekly earnings. Again there are some "buts". While we cannot get less than \$5 a week. we also can not get more than \$15.00 a week. Nor can we get these payments for more than 16 weeks a year. In other words, a man regularly earning \$20.00 a week would, during his unemployment, get \$10.00 a week for about 16 weeks a year.

Well, that is what social security puts *into* our pockets. Now let us find out where all this money is coming from and particularly, how much of it we must pay. All of these benefits are financed by payroll taxes. The taxes are so worked out that everyone contributes to the security he gets. In other words, every policy holder pays some premium. In that respect it is unlike the Townsend scheme that sought to plant Paradise on earth by having everything coming *into* our pockets

and nothing going out.

How much in taxes do we pay? On the face of things, all that we are called on to pay out is 1 to 3% of our payroll envelopes. The 1% rate is now in force and will continue through 1939. Then there is a gradual stepping up of the rate until 1949, when the 3% rate is reached. If, therefore, we are earning \$1,000 a year, our pocketbook is now tapped for \$10.00 a year, and by 1949 will be on the paying side for \$30.00 a year. Knowing, as we do, that for old age benefits alone we get back 31/2% of our earnings. whereas the maximum tax collected from us is only 3%, we naturally feel that our pocketbooks are ahead of the game.

However, the payments we make directly are only a part of the story. Our payments alone, would hardly enable Uncle Sam to make both ends meet in his insurance business. And so, in addition to our payments, our employers are called upon to match our payments with another 1 to 3% of the payroll to cover just the old age part, and still another 2% in 1937, and 3% in 1938 and thereafter, to cover the unemployment part. In other words, when the tax gets into high gear, we will be paying 3% of our payroll envelopes and our employers 6%, making the total premium for our insurance 9% of our pay envelopes.

If we could ignore the 6% paid by our employers, on the theory that it is *their* headache, not ours, we could say that our pocketbooks had the best of it. But, it is not as easy as all that. Though the payment in the first instance is by the other fellow, it has a subtle way of coming

back to haunt our own purses. Here is the reason: Our employers are in business to earn a profit. The 6% increase in payroll costs that they have to pay means that the expenses of the business are increased that much. Our employers will therefore naturally seek to make up for that expense to the fullest extent that they can. In the final analysis, this generally means increasing the sales price of their products or services, which in turn means that we have to pay more for the things we buy. In other words, when we go marketing we are paving for that part of our social security that on the face of things, we thought the other fellow was really paying. Putting it in another way, our social security is paid for largely by an indirect sales tax that we, as consumers, bear or share in the form of higher prices that we must pay for the things we buy.

For example, it is estimated that when the payroll taxes get going full blast, and on the basis of present costs and prices, manufacturers will have to add 2% to the price of shoes to take care of just their own payroll tax. This does not allow for the increased cost they may have to pay for materials and supplies by reason of the payroll taxes imposed on the companies they buy from. The price of furniture would similarly have to be hiked 2%, sewing machines $2\frac{1}{2}$ %. and radios 1.9%. Applying the payroll tax at top rates to the breakfast table would be like a sales tax of 1.3% on bread and other bakery products, up to 1% on butter, milk and cream, and 7/10 of 1% on sugar. On newspapers it would be 1.9%, on magazines and books 2%, and

It is calculated that automobile manufacturers would have to add \$7.50 to \$22.00 to the price of a car to cover just their own payroll taxes, and that as regards telephones, the tax would be the equivalent of \$1.85 for each phone.

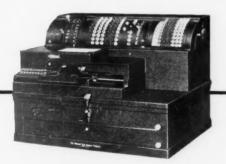
cigarettes 1.6%.

These price increases may not develop in full or permanently. American industry in the past has shown remarkable ability to absorb increased costs of labor and other items, and still keep prices down. This fact has largely been due to increased efficiency of labor and machines. In the long run, the probabilities are that the social security burdens will be absorbed in the same way. The immediate effects, however, will probably show themselves in increased prices and that means denting our pocketbooks. We, however, have the consolation of also being on the receiving side for social security benefits. It is here that the workers not covered by social security get the worst of it, because although not receiving directly any of the benefits, their pocketbooks, along with everybody else's, must bear the price increases that social security necessitates.

All in all, whether our pocketbooks are the better or the worse for social security, is hard to say. Individually, some of us will undoubtedly come out ahead; others will be on the short end. Collectively, the old saying still runs true that we get nothing for nothing, and all that glitters is not gold. Do not misunderstand me-I am not implying that social security legislation is undesirable. Far from it. To know that we have an insurance policy and that we are somewhat cushioned against the dread of "over the hill to the poorhouse" is in itself of tremendous value almost regardless of cost. I do think, however, that it is also well for us to know just how our pocketbooks are affected, and to realize that in reckoning the cost to us, we have to take into consideration important factors, like increased prices, that at first blush we might not hook up with our social security.



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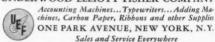
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